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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/012,195	12/05/2001	Lawrence G. Clawson	3402.1007-000	5684

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EXAMINER	
HANDAL, KAITY V	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/012,195	CLAWSON ET AL.	
	Examiner	Art Unit	
	Kaity Handal	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7,8,10,16-19,25,40,49 and 50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3, 5, 7, 16-19, 25, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woods et al. (US 6,835,354 B2) and further in view of Sanger et al. (US 6,793,698 B1).

With respect to claims 1, 7, 19 and 49, Woods teaches a reactor (fig. 1, 10) comprising: a core reaction zone/shell (20) being configured to conduct exothermic reactions including combustion/partial oxidation (30), and reforming (32); shells (16, 54, 52) each having a shell wall (illustrated), the shells (16, 54, 52) being arranged coaxially about the core reaction zone/shell (20); a gap (illustrated) being defined between each of the shells' walls to form a plurality of coaxial zones (illustrated), the reactor (10) being configured to permit heat transfer directly from one zone to another (illustrated); and the reactor (10) being configured so that hydrocarbon feed stock/(through inlet (36)) is preheated by traversing a first zone/chamber (18) extending between reactant inlet passage (36) and catalyst bed (30) (as illustrated). Woods further teaches preheating an oxygen containing gas/air by traversing a through the same first zone. Woods fails to teach wherein said oxygen containing

gas is preheated in a separate second zone. However, it would have been obvious to one having ordinary skill in the art to preheat the oxygen containing gas separately as done by Sanger. Sanger teaches a reactor having a core reaction zone comprising an oxidation zone (fig. 2, 140) and a reforming zone (200) and an air preheating zone (130) which is coaxial and positioned about the core reaction zone (as illustrated) wherein the air stream is preheated and is admixed with the pre-reforming effluent stream (col. 8, lines 55-60).

With respect to claim 2, Woods teaches wherein said reactor (10) is further configured so that water is preheated in a third zone/annular space (56).

With respect to claim 3, Woods teaches wherein said reactor (10) is configured so that water/steam is preheated along with the feedstock/(in chamber (18)) in the first zone/zone extending between reactant inlet passage (36) and catalyst bed (30) (as illustrated) (col. 7, lines 46-51).

With respect to claim 5, Woods teaches wherein a burner/surface combustor (78) supplies heat to a steam reforming reaction/catalyst bed (32) in the core reaction zone/shell (20).

With respect to claim 16, Woods teaches wherein said reactor/reformer (1) is configured so that said zones have gaps (illustrated).

With respect to claims 17-18, Woods teaches spacers/flange (60) placed in the zones (54) and (56) (illustrated) to maintain spacing between successive shells.

With respect to claim 25, Woods teaches a reactor (10) comprising: shells having walls (20, 16, 54, 52) arranged coaxially (as illustrated) about each other; a gap

being defined between each of the successive shells (20, 16, 54, 52) forming a plurality of coaxial zones (illustrated), the shells being configured to permit heat transfer directly from one zone to another; wherein a first zone (20) is configured to conduct steam reforming (in catalyst bed (32)) and at least one of the exothermic reactions combustion/partial oxidation (30); and the reactor (10) being configured so that hydrocarbon feed stock is preheated in a second zone (16)/(inside chamber (18) extending between reactant inlet passage (36) and catalyst bed (30) (as illustrated), and an oxygen containing gas is preheated in said second zone. a third zone/burner (3) (col. 2, lines 47-51). Woods fails to teach wherein said oxygen containing gas is preheated in a separate second zone. However, it would have been obvious to one having ordinary skill in the art to preheat the oxygen containing gas separately as done by Sanger. Sanger teaches a reactor having a core reaction zone comprising an oxidation zone (fig. 2, 140) and a reforming zone (200) and an air preheating zone (130) which is coaxial and positioned about the core reaction zone (as illustrated) wherein the air stream is preheated and is admixed with the pre-reforming effluent stream (col. 8, lines 55-60).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 40 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Woods et al. (US 6,835,354 B2).

With respect to claims 40 and 50, Woods teaches a reactor/reformer (1) comprising:

- a plurality of nested shells (20, 16, 54, 52) having a gap defined between each of the successive shells to form a plurality of coaxial zones between adjacent shells (illustrated);
- a stream of heated material/hot fluid produced by an exothermic reaction including partial oxidation in catalyst (30);
- a second stream of heated material/combustion gases produced by an exothermic reaction from surface combustor (78);
- and wherein the streams of heated materials are each routed through zones adjacent to at least one zone containing hydrocarbon feedstock/chamber (18) inside zone/shell (20); and wherein both the first exothermic reaction (inside shell (20)) and the second exothermic reaction (inside shell (54)) occur within the plurality of nested shells (as illustrated).

Response to Arguments

35 USC 112

Rejection made under 35 USC 112 is withdrawn by examiner due to applicant's amendment.

Prior Art

Applicant's arguments with respect to claims 1-3, 5, 7-8, 10, 16-19, 25, 40, 49 and 50 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

Claims 8 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KH

7/25/2006

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ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER